

IONIZED PHYSICAL VAPOR DEPOSITION (IPVD) PROCESS**ABSTRACT OF DISCLOSURE**

An iPVD system is programmed to deposit uniform material, such as barrier material, into high aspect ratio nano-size features on semiconductor substrates using a process which enhances the sidewall coverage compared to the field and bottom coverage(s) while minimizing or eliminating overhang within a vacuum chamber. The iPVD system is operated at low target power and high pressure $>50\text{mT}$ to sputter material from the target. RF energy is coupled into the chamber to form a high density plasma. A small RF bias (less than a few volts) can be applied to aid in enhancing the coverage, especially at the bottom.